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 TI Inorganic binders from alkali activated waste **glass**
powders and use for artificial stone manufacture
 IN Jin, Weihua
 PA USA
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 CC 58-4 (Cement, Concrete, and Related Building Materials)
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U.S. case allowed
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AB A binder compn., comprising a **glass powder** with a particle size of at least less than 0.15 mm and an alkali activator contg.

at least one alkali metal and at least one silicate, is described. Preferably, a **sodium silicate** with a SiO:Na₂O wt. ratio between about 1.6:1 to about 2.0:1 is used. Mixed with water, the binder compn. can be cured at ambient temp., but rapidly yields a very high strength at an elevated temp. between about 40 .degree.C to about

120

.degree.C, preferably, between about 70 .degree.C to about 90 .degree.C. Further supplementary materials may be added to the binder. Further, a method of making artificial stone, using glass as a sole binder and aggregate, is described. Thus, a binder was prep'd. from 100 parts **glass powder** (beverage bottles crushed and ground to US std. sieve no. 200) and 8.53 parts **sodium silicate** (SiO₂:Na₂O wt. ratio .apprx. 1.636), mixed with water to form a past and cast in a mold, and cured at 80 .degree.C. The compressive strength immediately after curing was 92.19 MPa which increased to 159.96 after 2 yr.

ST inorg binder waste glass recycling alkali activation; artificial stone alkali activated waste glass binder aggregate

IT Alkali metal fluorides
 Alkali metal hydroxides

RL: MOA (Modifier or additive use); USES (Uses)
 (activator; inorg. binders from alkali-activated waste **glass** **powders** and use with waste glass aggregate for artificial stone manuf.)

IT Alkali metal compounds

RL: MOA (Modifier or additive use); USES (Uses)
 (activators; inorg. binders from alkali-activated waste **glass** **powders** and use with waste glass aggregate for artificial stone